REMARKS

Entry of the above-noted amendments, reconsideration of the application, and allowance of all claims pending are respectfully requested. By this amendment, claims 1, 8-9, 11-12, 16-17, 19, 24, and 27 are amended. These amendments to the claims constitute a bona fide attempt by Applicant to advance prosecution of the application and obtain allowance of certain claims, and are in no way meant to acquiesce to the substance of the rejections. Support for the amendments can be found throughout the specification (e.g., paragraphs 34-39), figures (e.g., FIGS. 6-8), and claims and thus, no new matter has been added. Claims 1-27 are pending. Claims 6-7, 14-15, and 23 have been withdrawn from consideration as being directed to a non-elected species.

Claim Rejections - 35 U.S.C. §§ 102 and 103:

In the Office Action mailed December 14, 2005, the Examiner rejected claims 1-4, 8-12, 16-21, and 24-27 under 35 U.S.C. §102(b) as being anticipated by Gordon et al. (USP 5,661,774; "Gordon"). The Examiner next rejected claims 5, 13 and 22 under 35 U.S.C. §103(a) as being unpatentable over Gordon in view of Heuscher et al. (USP 5,262,946; "Heuscher"). These rejections are respectfully, but most strenuously, traversed.

It is well-settled that there is no anticipation unless (1) all the same elements are (2) found in exactly the same situation and (3) are united in the same way to (4) perform the identical function. Since the Office Action's citations to each of the applied references is missing at least one element of each of Applicant's independent claims, Applicant respectfully submits that the claimed invention is not anticipated by the Office Action's citations to the applied references, as further discussed below.

Applicant respectfully submits that the Office Action's citations to the applied references, with or without modification or combination, assuming, *arguendo*, that the modification or combination of the Office Action's citations to the applied references is proper, do not teach or suggest one or more elements of the claimed invention, as further discussed below.

For explanatory purposes, Applicant discusses herein one or more differences between the Office Action's citations to the applied references and the claimed invention with reference to one or more parts of the applied references. This discussion, however, is in no way meant to acquiesce in any characterization that one or more parts of the Office Action's citations to the applied references correspond to the claimed invention.

Applicant respectfully submits that the Office Action's citations to the applied references do not teach or suggest one or more elements of the claimed invention. A careful reading of the Office Action's citations to the applied reference fails to teach or suggest, for example, the hub and the number of HF electromagnetic energy filters in the spoked relationship with the hub and positional between the HF electromagnetic energy source and the subject, the number of HF electromagnetic energy filters including at least the first filter and the second filter wherein the first filter is positioned between the HF electromagnetic energy source and the subject by rotation of the hub when the HF electromagnetic energy source is energized to the first energy state and the second filter is positioned between the HF electromagnetic energy source and the subject by rotation of the hub when the HF electromagnetic energy source is energized to the second energy state, as recited in Applicant's independent claim 1.

Gordon (column 13, line 8, to column 14, line 20; FIGS. 1-3) discloses:

> For the preferred dual energy baggage scanner shown in FIGS. 1-3, as seen in FIG. 5, in order to further enhance the disparity between the energy levels of high and low energy beams passing through the baggage being scanned, the waveform generator 186 preferably includes a motor 260 for rotating a filter 262, a rotary shaft encoder 264, and a digital-to-analog converter 268. Filter 262 is a preferably flat disk that is disposed proximal to X-ray tube 128 for rotation within the beam generated by X-ray tube 128. Rotary shaft encoder 264 senses the angular position of filter 262 and generates a digital signal representative thereof, and applies this digital signal to digital-to-analog converter 268. The latter generates an analog signal representative of the digital signal generated by encoder 264 and applies the analog signal to amplifier 230 of power supply 200.
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> In the illustrated embodiment, filter 262 is a flat metal disk that is divided up into six equally sized "pie shaped" segments, although the number of segments can vary. Three of the segments 270 are formed from relatively thick sheets 128 of dense material (e.g., 0.6 mm of copper) that are sufficiently thick so as to absorb a portion of the low energy photons generated by X-ray tube 128 and are sufficiently thin so as to transmit substantially all of the high energy photons generated by tube 128. The three remaining segments 272 are formed from relatively thin sheets of light material (e.g., 0.1 mm of aluminum) and are sufficiently thinner than segments 270 so that segments 272 transmit a higher percentage of the low energy photons generated by tube 128. Segments 270 and 272 are alternately disposed so that each of the thick segments 270 is adjacent two of the thinner segments 272, and vice versa.
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> In operation, filter 262 rotates under the control of motor 260, and analog-to-digital converter 268 generates a periodically varying analog signal representative of the angular orientation of filter 262, and specifically indicating whether a segment 270 or a segment 272 is disposed in the beam 124. In the

> illustrated embodiment, converter 268 preferably generates a sinusoidal signal characterized by frequency f.sub.1, where f.sub. is equal to three times the rotational frequency of filter 262. As stated above, the rate or frequency f.sub.1 of the signal generated by converter 268 and applied to amplifier 230 controls the periodic rate at which the X-ray beam changes between high and low energy levels. Since the signal generated by converter 268 is synchronized with the rotation of filter 262, waveform generator 186 insures that the periodic rate of change of the X-ray beam between the two energy levels is synchronized with the rotation of filter 262.
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> In the illustrated embodiment, filter 262 preferably rotates 120.degree. for every oscillation of the X-ray beam, and the initial position of filter 262 is adjusted so that one of the thicker sections 270 is disposed in the beam between the tube 128 and the baggage 112 (shown in FIG. 1) when tube 128 generates the high energy beam (i.e., when the voltage level between node A and system ground equals V.sub.1), and one of the thinner sections 272 is disposed in the beam when tube 128 generates the low energy beam (i.e., when the voltage level between node A and system ground equals V.sub.2). So filter 262 removes a portion of the low energy photons from the high energy beam and filter 262 removes few if any of the low energy photons from the low energy beam. So filter 262 acts to increase the disparity between the energy levels of the high and low energy beams generated by tube 128.
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> In the preferred embodiment, the rotation of filter 262 (and therefore the oscillation of the X-ray beam) is synchronized to the rotation of rotating disk 124 of the baggage scanner (shown in FIGS. 1-3), so that the X-ray beam periodically changes between the high and low energy levels and back to the high energy level (one cycle or period of the waveform) N times for every 360.degree. rotation of disk 124, where N is an integer. In one preferred embodiment N is equal to 600, although this number can clearly vary. It will be appreciated that N low energy projections and N high energy projections will be thereby provided for each 360.degree. rotation of disk 124. Synchronization of rotating disk 124 and filter 262 may be accomplished by well known means using what is commonly referred to as the "graticule" of a CT scanner to control the operation of a motor controller 280, which in turn controls the speed of motor 260.

The flat metal disk filter 262 divided up into the equally sized "pie shaped" alternately disposed segments 270 formed from relatively thick sheets 128 of dense material and segments 272 formed from relatively thin sheets of light material, and that rotates under the control of the motor 260 fails to disclose, *inter alia*, the segments 270, 272 in a spoked relationship. Simply missing from the Office Action's citation to Gordon is any mention of the hub and the number of HF electromagnetic energy filters in the spoked relationship with the hub and positional between the HF electromagnetic energy source and the subject, the number of HF electromagnetic energy filters including at least the first filter and the second filter wherein the first filter is positioned between the HF electromagnetic energy source and the subject by rotation of the hub when the

HF electromagnetic energy source is energized to the first energy state and the second filter is positioned between the HF electromagnetic energy source and the subject by rotation of the hub when the HF electromagnetic energy source is energized to the second energy state, as recited in Applicant's independent claim 1.

So, the Office Action's citation to Gordon fails to satisfy at least one of the limitations recited in Applicant's independent claim 1.

The shortcomings of the Office Action's citation to Gordon relative to certain elements of the claimed invention have been discussed above. The Office Action proposes a combination of the citation to Gordon with a citation to Heuscher. However, the Office Action's citation to Heuscher does not overcome the deficiency of the Office Action's citation to Gordon. Applicant respectfully submits that the proposed combination of the Office Action's citation to Gordon with the Office Action's citation to Heuscher fails to provide the required configuration, assuming, *arguendo*, that the combination of the Office Action's citation to Gordon with the Office Action's citation to Heuscher is proper.

Heuscher (column 10, line 18, to column 11, line 2; FIGS. 6A-6C) discloses:

> As discussed above, the views may be grouped into a group spanning 360.degree. for 180.degree. based reconstructions. The energy level (kV) of the x-ray tube in another embodiment is varied or alternated between two levels. By continuously varying the kV with a prescribed high to low variation as shown in 112 of FIG. 6A, two weighting functions (116, 118) can be applied to the respective projections to produce two sets of 180.degree. based projections, both of which correspond to the same imaging plane. The average kV value for each ray in each set corresponds to either the high kV level or low kV level. Exactly 11/2 rotations are required for each cycle from high kV to low kV back to high kV. The x-ray current 110 is varied counter cyclically to maintain the noise in both the high and low kV projections while minimizing the total exposure. Curve 114 identifies the high kV weighting function, W.sub.hi (R.multidot.180,.beta.)=W.sub.hi (.gamma.,.beta.).
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> With reference to FIG. 6B, the weighting function applied by the interpolating means 46 shifts for the high and low kV portions. That is, curve 116 illustrates the preferred weighting function for the high kV or voltage projection rays whereas the curve 118 illustrates the weighting function used with the low energy rays. These ray projections are recombined into two separate 180.degree. based sets or groups of projections. In the illustrated embodiment, the beam width corresponds to about three rings of the helix and a reconstructed image or slice is obtained for every one and a half rings of the helix.
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> With reference to FIG. 6C, the variation in weighting values for the extremes of the fan (.beta.=+/-.beta..sub.o) is illustrated for the high kV 180.degree. based projection set. More specifically, weighting function curve 116 is shifted or swayed between curve 116a at one extreme ray of the fan and 116b

> at the other extreme ray of the fan. Analogous shifts are made for the weighting function 118 for the low kV projection set.
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> To increase the x-ray collection efficiency, a plurality of detectors are positioned adjacent to each other in the longitudinal direction. Positioning two detectors longitudinally enables the width of the radiation seen by each detector to be selectively adjusted at the detector. Analogously, three or more detectors can be disposed in longitudinal alignment. This enables data along three interleaved spirals to be collected concurrently. In one embodiment, the three spirals of data cover the same volume with a greater sampling density. This is particularly advantageous in the dual energy modes described above. Alternately, the speed of the patient table is tripled such that the three sets of detector collect data with the same sampling density but three times as fast.

The interpolating means 46 and other components in Heuscher fail to disclose the hub and the number of HF electromagnetic energy filters in the spoked relationship with the hub and positional between the HF electromagnetic energy source and the subject, the number of HF electromagnetic energy filters including at least the first filter and the second filter wherein the first filter is positioned between the HF electromagnetic energy source and the subject by rotation of the hub when the HF electromagnetic energy source is energized to the first energy state and the second filter is positioned between the HF electromagnetic energy source and the subject by rotation of the hub when the HF electromagnetic energy source is energized to the second energy state, as recited in Applicant's independent claim 1.

So, the Office Action's citation to Heuscher fails to satisfy at least one of the limitations recited in Applicant's independent claim 1.

The Office Action's citations to Gordon and Heuscher both fail to meet at least one of Applicant's claimed features. For example, there is no teaching or suggestion in the Office Action's citations to Gordon and/or Heuscher of the hub and the number of HF electromagnetic energy filters in the spoked relationship with the hub and positional between the HF electromagnetic energy source and the subject, the number of HF electromagnetic energy filters including at least the first filter and the second filter wherein the first filter is positioned between the HF electromagnetic energy source and the subject by rotation of the hub when the HF electromagnetic energy source is energized to the first energy state and the second filter is positioned between the HF electromagnetic energy source and the subject by rotation of the hub when the HF electromagnetic energy source is energized to the second energy state, as recited in Applicant's independent claim 1.

Furthermore, the Office Action does not allege that the art of record provides any teaching, suggestion, or incentive for modifying the citations to Gordon and/or Heuscher to provide the claimed configuration.

For at least the reasons presented above with reference to claim 1, the independent claims are believed neither anticipated nor obvious over the art of record. The corresponding dependent claims are believed allowable for at least the same reasons as the independent claims, as well as for their own additional characterizations.

Withdrawal of the §§ 102 and 103 rejections is therefore respectfully requested.

Notwithstanding the amendments made herein, it is believed that claims 1, 8, and 19 are generic and, as such, upon their allowance, claims 6-7, 14-15, and 23 should be rejoined.

Therefore, in light of at least the foregoing, Applicant respectfully believes that the present application is in condition for allowance. As a result, Applicant respectfully requests timely issuance of a Notice of Allowance for claims 1-27.

Applicant hereby authorizes charging of deposit account no. 07-0845 for any additional fees associated with entering the aforementioned claims.

Applicant appreciates the Examiner's consideration of these Amendments and Remarks and cordially invites the Examiner to call the undersigned, should the Examiner consider any matters unresolved.

Respectfully submitted,

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